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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/849,307	05/07/2001	Randal Chilton Burns	ARC920000024US1	8672

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EXAMINER	
KNOLL, CLIFFORD H	

ART UNIT	PAPER NUMBER
2112	9

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/849,307	Applicant(s) BURNS ET AL.	
	Examiner Clifford H Knoll	Art Unit 2112	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12,14-45,58 and 61-67* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to communication filed 2/27/04. Claims 13, 46-57, and 59-60 have been cancelled. Claims 1-12, 14-45, 58, and 61-67 are pending.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Drawings

The corrected drawings were received on 2/27/04. These drawings are accepted for the purposes of examination.

Claim Rejections - 35 USC § 103

Claims 1-3, 5, 7-10, 14, 16-18, 20, 22-25, 28, 30-34, 36, 38-41, 58, 61-62, 64, and 66-67 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Leach (Common internet file system (CIFS/1.0) protocol: preliminary draft) in view of Miloushev (US 2002/0120763).

Regarding claims 1 and 16, Leach discloses locking system and a corresponding method on a distributed file system (e.g., §1.1.2), a consumer lock (e.g., §2.7.3, "level II oplock), a producer lock (e.g., §2.7.1, "exclusive oplock"), wherein upon completion of said writer changing said file of one or more blocks of data (e.g., §1.1.6) , the reader is notified the file has changed (e.g., §1.1.4; §2.7.3, "if any write operation is performed it

need only notify the level II clients"). Leach does not expressly mention that the producer releases the lock; however this is manifestly the obvious use of a lock, as exemplified by Miloushev. Miloushev discloses wherein the writer releases the lock (e.g., paragraph [0230]).

Regarding claim 30, Leach discloses locking system and a corresponding method on a distributed file system (e.g., §1.1.2), a consumer lock, a producer lock (e.g., §1.1.3), updating (e.g., §1.1.4), and a file with one or more blocks of data (e.g., §1.1.6). Leach fails to mention releasing the lock; however this common practice is exemplified by Miloushev. Miloushev discloses wherein the writer releases the lock (e.g., paragraph [0230]).

It would be obvious to combine Miloushev with Leach, because the field of Miloushev's invention was distributed file systems, for which Leach provided a widely regarded industry specification. In particular, Miloushev explicitly references the specification as being applicable (e.g., paragraph [0012]), and further notes particular advantages to using the standard in his aggregating file system (e.g., paragraph [0071]). Therefore, it would be obvious to one of ordinary skill in the art to combine Miloushev with Leach at the time the invention was made.

Regarding claims 2 and 17, Leach also discloses writing updated data to a different physical location (e.g., §1.1.3, "read-caching").

Regarding claims 3 and 18, Leach further discloses notification informs said reader of said updated data location (e.g., §1.1.3, "notifies all clients").

Regarding claim 5, 20, and 36, Leach further discloses reading said updated data from said updated data location (e.g., §1.1.4, "the server").

Regarding claims 7, 22, and 38, Leach fails to disclose a physically separate block for writing however this is disclosed by Miloushev. Miloushev discloses writing data to storage devices physically separated from the storage device located on said file system server (e.g., paragraph [0414]).

Regarding claims 8, 23, and 39, Leach fails to disclose physically separate storage devices; however Miloushev discloses writing data via a storage area network (e.g., paragraph [0034]).

Regarding claims 9, 24, and 40, Leach fails to disclose storing metadata on the storage device; however, Miloushev also discloses the server storing metadata (e.g., paragraph [0029]).

Regarding claims 10, 25, and 41, Leach fails to disclose this feature; however, Miloushev also discloses the storage devices cache data (e.g., paragraph [0414]).

Regarding claims 14, 28, and 44, Leach fails to disclose this feature; however, Miloushev also discloses where readers and writers access metadata via a data network separate from said storage area network (e.g., paragraphs [0115], [0269]).

Regarding claim 31, Leach further discloses notification informs said reader of said updating (e.g., §1.1.3, "notifies all clients").

Regarding claims 32 and 33, Leach also discloses writing updated data to a different physical location (e.g., §1.1.3, "read-caching").

Regarding claim 34, Leach further discloses notification informs said reader of said updated data location (e.g.,§1.1.3, "notifies all clients").

Regarding claim 58, Leach discloses server connected to at least one client managing data consistency and cache coherency through multiple locking protocols (e.g., §1.1.3). Leach fails to disclose the storage device or assignment via metadata; however, Miloushev discloses a storage device connected to said client (e.g., paragraph [0058]), a locking protocol assigned via file metadata (e.g., paragraph [0272]).

It would be obvious to combine Miloushev with Leach, because the field of Miloushev's invention was distributed file systems, for which Leach provided a widely regarded industry specification. In particular, Miloushev explicitly references the specification as being applicable (paragraph [0012]), and further notes particular advantages to using the standard in his aggregating file system (e.g., paragraph [0071]). Therefore, it would be obvious to one of ordinary skill in the art to combine Miloushev with Leach at the time the invention was made.

Regarding claim 61, Leach fails to disclose storage devices physically separated; however, Miloushev discloses writing data to storage devices physically separated from the storage device located on said file system server (e.g., paragraph [0414]).

Regarding claim 62, Leach further discloses notification informs said reader of said updated data location (e.g., §1.1.34, "notifies all clients").

Regarding claim 64, Leach further discloses reading said updated data from said updated data location (e.g., §1.1.4, "the server").

Regarding claim 66, Leach fails to disclose the web server; however, Miloushev further discloses the reader as a web server (e.g., paragraph [0053]).

Regarding claim 67, Leach fails to disclose the database management system; Miloushev further discloses the writer as a database management system (e.g., paragraph [0387]).

Therefore claims 1-3, 5, 7-10, 14, 16-18, 20, 22-25, 28, 30-34, 36, 38-41, 58, 61-62, 64, 66-67 are rejected.

Claims 4, 6, 11-12, 15, 19, 21, 26-27, 29, 35, 37, and 42-45 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Leach in view of Bourne (US 2003/0120875).

Regarding claims 4, 19, and 35, Leach does not expressly mention updating changed data blocks in cache; however this implementational detail is disclosed by Bourne. Bourne discloses updating cache thereby providing finer granularity (e.g., paragraph [0086]).

Regarding claim 6, 21, and 37, Leach does not expressly mention that a reader continues to read; however this implementational detail is disclosed by Bourne. Bourne discloses the reader continues to read while said writer is writing (e.g., paragraph [0053]).

Regarding claims 11, 26, and 42, Leach does not expressly mention the particular implementation of a web server; however, this is disclosed by Bourne. Bourne discloses the reader is a web server (e.g., paragraph [0034]).

Regarding claims 12, 27, and 43, Leach does not particularly mention the implementation of a server as a database management system; however Bourne discloses this feature. Bourne discloses the writer is a database management system (e.g., paragraph [0035]).

Regarding claims 15, 29, and 45, Bourne discloses multiple locking systems for data where the locking system used for a particular block is dependent on what application utilizes said particular block of data and the locking system utilized is indicated by the metadata (e.g., paragraph [0084]).

It would be obvious to combine Bourne with Leach, because the field of Bourne's invention was distributed file systems, for which Leach provided a widely regarded industry specification. In particular, the specification of locking protocols in a distributed environment with caching such as the invention of Bourne. Therefore, it would be obvious to one of ordinary skill in the art to combine Bourne with Leach at the time the invention was made.

Thus are claims 4, 6, 11-12, 15, 19, 21, 26-27, 29, 35, 37, 42-45 rejected.

Claims 63 and 65 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Leach and Miloushev as applied supra, further in view of Bourne.

Regarding claims 63, Leach and Miloushev do not expressly mention updating changed blocks in cache; however this implementational detail is disclosed by Bourne. Bourne discloses updating changed blocks in cache on notification thereby providing finer granularity (e.g., paragraph [0086]).

Regarding claim 65, Leach and Miloushev do not expressly mention that a reader continues to read; however this implementational detail is disclosed by Bourne. Bourne discloses the reader continues to read while said writer is writing (e.g., paragraph [0053]).

It would be obvious to combine Bourne with Miloushev and Leach, because Bourne's improvement was directed toward caching in distributed file systems such as that practiced by Miloushev, and specified by Leach. Therefore, it would be obvious to one of ordinary skill in the art to combine Bourne with Miloushev and Leach at the time the invention was made.

Thus are claims 63 and 65 rejected.

Response to Arguments

Applicant's arguments filed 2/27/04 have been fully considered but they are not persuasive.

Applicant argues with respect to previous rejection under Norton; however, some of the arguments are applicable to the interpretation used in rejecting under Leach supra. Therefore, to the extent applicable, Examiner clarifies interpretation of Leach and teaching references in light of Applicant's arguments.

Applicant argues that prior art fails to disclose a consumer lock "maintained by one or more readers" and a producer lock "maintained by a single writer" (p. 24, item 1). Leach as applied above clearly demonstrates otherwise; Leach discloses, in the language of claim 1, a "lock granted to one or more readers" (e.g., §2.7, "level II

oplock") and a "consumer lock granted to a single writer" (e.g., §2.7, "exclusive oplock") as cited supra.

Applicant further argues (p. 24, item 2) that prior art "fails to provide for the specific limitation of writing data without publishing the same data"; however the recitation does not clearly recite a writing that proceeds "without publishing" whatever distinction is intended. Regardless, as claimed, "upon completion of said update, said writer releases said producer lock, and upon release of said producer lock, said updated file being published" (claim 1; also this is referenced parenthetically in Applicant's arguments, p. 24, item 2). In Leach, typically a write is performed to update, and then a close is performed to release the lock (e.g., §2.7.1, Table). Thus Leach shows this sequence of events; however in point of fact the example given for release in Leach is instigated by a request for the exclusive lock from another client; therefore the teaching of Miloushev is relied upon to clearly show the sequence of writing, followed by releasing the lock, followed by updating readers (paragraph [0230]). Miloushev teaches this in the context of a network file protocol in general (e.g., paragraph [0229]), and the CIFS protocol of Leach in particular (e.g., paragraph [0012]). Thus Miloushev discloses a clear use of the protocol in the manner claimed in the Applicant's invention.

Applicant further argues the prior art fails to provide "for the specific limitation of updating a cached copy of a file (associated with a reader) at a finer granularity by updating changed blocks of data" (p. 25, item 3). In fact, rejection supra is based on same teaching reference of Bourne, used previously. Bourne teaches both invalidating (as previously claimed) and updating (as currently claimed), and, in the case of

updating, of doing so at a finer granularity. The new citation of Bourne used supra reflects this change of interpretation.

Applicant further argues that the prior art does not teach "allowing a writer with a producer lock to perform an out-of-place write to a storage unit that is physically separated from the file system server, wherein the storage unit is part of a storage area network" (p. 25, item 4). Recitation directed to this feature is found for example in claims 7-8. Miloushev discloses "the file switch 1811 will preferably cache the file ... in order to increase the access bandwidth and reduce the access latency of clients from the network 1812 to that file" (paragraph [414], cited supra). As the access is over a network, it is deemed reasonable to assume the disclosure refers to physically separate entities. This is further seen to be part of a storage area network (paragraph [0035], cited supra). Recitation does not support an "out-of-place write" per se. Examiner deems Miloushev to anticipate this feature as claimed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chiou (US 2002/0078299) discloses a further network caching system, while Li (US 6591266) discloses the network caching system in a database context.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clifford H Knoll whose telephone number is 703-305-8656. The examiner can normally be reached on M-F 0630-1500.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark H Rinehart can be reached on 703-305-4815. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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